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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

Draft Management & Implementation Plan for Controlled Mode Ops at JSC

FROM	EXTENSION	NO.
Member, Ad Hoc Shuttle Security Group		DCI-CT-3180-78
		DATE 25 October 1978

TO: (Officer designation, room number, and building)	DATE RECEIVED	DATE FORWARDED	OFFICER'S INITIALS	COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)
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FORM 3-62 610 USE PREVIOUS EDITIONS ☐ SECRET ☐ CONFIDENTIAL ☐ INTERNAL USE ONLY ☑ UNCLASSIFIED

The Director of Central Intelligence

Washington, D.C. 20505

Collection Tasking Staff

DCI-CT-3180-78
25 October 1978

MEMORANDUM FOR: [redacted] STAT

SUBJECT: Draft Management and Implementation Plan for Controlled Mode Operations at JSC

1. The Subject draft Plan has been forwarded for review, comment, and recommended changes, if any.

2. I ask you to review the draft plan and provide me your comments by no later than 1 November, so that I may reflect them in a response as requested by 6 November.

[redacted] STAT

Attachment:
Draft Plan for each Addressee

UNCLASSIFIED

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.
20330

16 OCT 1978

STAT

DCI Representative, Ad Hoc
Shuttle Security Group
Intelligence Community Staff
Central Intelligence Agency
Washington, DC 20505

Dear

STAT

The Secretary of Defense has directed the Air Force to implement the Controlled Mode to provide for secure Space Shuttle operations at Johnson Space Center through the mid-1980's. His direction is based upon Dr. Jordan's Shuttle Security Group report to the Aeronautics and Astronautics Coordinating Board. We have prepared the attached draft Management and Implementation Plan to comply with the Secretary's direction. We will need Director of Central Intelligence (DCI) approval to signify that the Controlled Mode concept can satisfy the security requirements validated by the DCI 12 July 1977 letter, "Security Requirements for the Space Transportation System (TCS 889408-77)."

I will process this plan in two steps. The first step requires that each participating agency review the attached draft plan. I would appreciate receiving your comments and recommended changes by 6 November 1978. I have made similar requests to Dr. S.L. Zeiberg (OSD), Mr. John Yardley (NASA), and Mr. David Gardner (National Security Agency).

My staff will consolidate the comments and revise the plan as expeditiously as possible. I will then ask the Secretary of the Air Force to sign the Management and Implementation Plan and forward it to the NASA Administrator, the Director of Central Intelligence, and the Secretary of Defense for their final approval and signature.

Major J. Jacoby (AF/RDSL, 695-0520) is available to provide additional information or assist you as necessary.

Sincerely

William N. Yost

WILLIAM N. YOST, Brigadier General, USAF
Deputy Director of Command Control,
Communications and Information
DCS/Research, Development & Acquisition

1 Attachment
Draft Management and
Implementation Plan

DRAFT

DOD STS MISSION OPERATIONS MANAGEMENT AND IMPLEMENTATION PLAN FOR CONTROLLED MODE (JSC)

OCTOBER 1978

DRAFT

Declassified in Part - Sanitized Copy Approved for Release 2012/03/20 : CIA-RDP92B00181R001901710018-3

APPROVAL PAGE

DOD STS MISSION OPERATIONS MANAGEMENT AND IMPLEMENTATION PLAN FOR CONTROLLED MODE (JSC)

OCTOBER 1978

NASA ADMINISTRATOR

SECRETARY OF DEFENSE

SECRETARY OF THE AIR FORCE

DIRECTOR OF CENTRAL INTELLIGENCE

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ACRONYMS

AFOSI	Air Force Office of Special Investigation
AFSCF	Air Force Satellite Control Facility
AFSS	Air Force Security Service
BLDG 5	Facility at JSC Housing the Shuttle Mission Simulator
BLDG 12	Facility at JSC Housing the Institutional Data Processing System
BLDG 30	Facility at JSC Housing the Mission Control Center
CAPS (I)	Crew Activity Planning System (first generation software)
DAA	Designated Approval Authority
DOD	Department of Defense
FBCS	Fixed Base Crew Station
FCE	Flight Control Element
FCR	Flight Control Room
FDF	Flight Data File
FPE	Flight Planning Element
FPS	Flight Planning System
FRE	Flight Readiness Element
I&C	Integration and Checkout
IUS	Inertial Upper Stage
JSC	Johnson Space Center
LV	DOD Space Shuttle Program Office at SAMSO
MBCS	Motion Based Crew Station
MCC	Mission Control Center
MMDB	Master Measurements Data Base
MPSR	Multipurpose Support Room
NASA	National Aeronautics and Space Administration
NSA	National Security Agency
ODDL	Onboard Digital Data Load
ORD	Orbital Requirements Document
OSP	Operational Support Plan
SAMSO	Space and Missile Systems Organization
SDL	Software Development Laboratory
SDPC	Shuttle Data Processing Computer
SMS	Shuttle Mission Simulator
SOPC	Shuttle Operations and Planning Center
SSV	Space Shuttle Vehicle
STC	Satellite Test Center
Univac 11XX	Unspecified Computer from UNIVAC - Eleven Hundred Series Line

DEFINITIONS

Color Change	The procedure or process through which a system or facility is reconfigured from operating in an unsecured manner to a secured manner, or vice versa
Red and Black	Red refers to systems or facilities containing classified information; black refers to systems or facilities containing no classified information
System High	The security mode in which all users with access to the system have a security clearance for the highest classification and most restrictive type of material contained in the system, but at least some users do not have a need-to-know for all classified material contained in the system. An ADP system is operating in the System High Mode when the computer facility and all connected peripherals and terminals are protected in accordance with the requirements for the highest classification category and type of material contained in the system.
System X	The NASA-developed interactive flight planning capability residing on the Interdata 8/32 Minicomputer System. System X is used for mission feasibility analysis and most SSV flight design activities.
System Y	The NASA-developed non-interactive flight planning capability residing on the Univac 11XX computer system. System Y is used primarily for precision flight design work.
TEMPEST	Security provisions pertaining to electromagnetic emissions from systems and facilities containing classified information.

1.0 PURPOSE

This document defines the management approach, sequence of major activities, and costs necessary to implement a secure Shuttle operation capability at JSC which can accommodate the DOD traffic through the early to mid-1980s. The discussion is limited to the Controlled Mode capability development at JSC; other required activities (e.g., IUS flight control system development) that will be accomplished by DOD are not addressed.

2.0 CONTROLLED MODE (JSC) DESCRIPTION

The Controlled Mode of Operations at JSC permits classified SSV-related flight preparation, real-time flight control and postflight analysis functions to be performed at NASA/JSC. Under this mode of operations, NASA will simultaneously plan and conduct unclassified NASA flights and classified DOD flights. Protection of DOD classified data will be accomplished by segregating data through color changing of computers, dedicating selected computers, electronic switching, and manual procedures. Security will be provided to the DOD SECRET level.

Classified DOD flight planning will be performed at JSC, by cleared personnel, using dedicated Interdata 8/32 and Harris 7 minicomputers along with a color-changed Univac 11XX computer. The Univac 11XX will also be used to generate the classified portion of the SSV onboard digital data load (ODDL).

The unclassified portion of the ODDL will be prepared using the SDL. Verification of the ODDL will be performed on the secured SMS where the classified and unclassified ODDL segments will be merged.

The SMS will be secured by physical and visual access control and by color changing all associated computers and isolating the Fixed Base Crew Station from the Motion Base Crew Station with a series of T-bar switches. Separate secure communications with the MCC will be provided for DOD integrated simulations. All classified training and simulations will be accomplished using the SMS.

Real-time control of two simultaneous DOD classified flights will be provided by employing an MCC configuration control system capable of separating the MCC equipment into isolated "red" and "black" strings of equipment. This system depends on a complex set of routing and selection switches to provide the red/black isolation and is monitored by special consoles and processors. MCC units which are shared with NASA include IBM 370/168 and Interdata 8/32 computers and one flight control room. All are color changed to support classified operations. The MCC interface with the outside world is secured using communications encryption.

Postflight analysis and preparation of some flight support data are accomplished on a Cyber 74 computer which will be color changed as required.

3.0 ACTIVITIES

This section identifies and describes the major tasks which must be performed by DOD and NASA to achieve a Controlled Mode capability at JSC.

3.1 DOD ACTIVITIES

This section defines the tasks to be performed by DOD which support acquisition of the Controlled Mode capability. DOD will provide overall technical direction of DOD and NASA tasks to insure all Controlled Mode implementation activities are fully integrated.

3.1.1 Develop COMSEC System

NSA and/or AFSS will develop, install, and test cryptographic equipment at the MCC in Building 30, the SMS in Building 5, and the Orbiter vehicle.

3.1.2 Security Engineering

DOD (SAMSO) will establish a Security Engineering Team to evaluate the JSC Controlled Mode security system at JSC. This team will define facility and system requirements, develop validation test plans, support JSC in the development of configuration control procedures, and perform the integration activities necessary to achieve DOD certification of the Contollled Mode configuration and procedures.

3.1.3 Software Security Verification

DOD (SAMSO) will perform a detailed evaluation of the NASA-developed mission operations software, which was developed by uncleared personnel, to verify that it is suitable for use on a classified mission.

3.1.4 TEMPEST Validation

AFSS will supplement the security engineering team by developing requirements, providing technical advice, and accomplishing a full TEMPEST verification of the JSC facility.

3.1.5 Technical Survey

AFOSI will supplement the security engineering team by developing requirements and providing technical advice on security education and consciousness and accomplishing a technical survey of the JSC facility.

3.2 NASA TASKS

This section outlines the Controlled Mode tasks to be performed by NASA.

3.2.1 Facility Modifications

NASA (JSC) will modify its facilities to accommodate secure operations and to provide TEMPEST protection. Building 30 will be modified to: 1) install the cryptographic equipment, 2) provide a secure DOD FCR and DOD MPSR, 3) provide secure areas for flight planning systems, and 4) provide a secure area for the Cyber 74. Building 5 will be modified to physically, visually, and electronically isolate the FBCS, the MBCS, and the Spacelab simulator. Relatively minor modifications will be required in Building 4 for classrooms and FDF preparation and in Building 12 for a secure 11XX capability.

3.2.2 Flight Planning Capability Development

NASA (JSC) will perform all activities necessary to provide a secure capability for SSV flight design and crew activity planning. This capability will include: 1) a dedicated System X in a secure area of Building 30 for routine Shuttle flight design, 2) a securable System Y capability in Building 12 for detailed flight design and postflight analysis, 3) a secure dedicated CAP system in Building 30, and 4) a securable Cyber 74 system in Building 30 for MMDB management and post-flight analysis support.

3.2.3 Flight Readiness Capability Development

NASA (JSC) will perform all activities necessary to provide a secure capability for personnel training, FDF preparation, and SSV ODDL preparation. The primary task will be to modify the design of the SMS configuration to permit simultaneous classified and unclassified operations and to support SSV ODDL validation.

3.2.4 Flight Control Capability Development

NASA (JSC) will perform the activities necessary to provide a secure capability for real-time flight control from the MCC. The primary task is to modify the MCC system configuration to permit total isolation of one (out of three) data streams. Implementation involves significant hardware additions (e.g., new SOPC), some new software (e.g., output labeling), and extensive procedural changes.

4.0 MANAGEMENT APPROACH

Management responsibility for implementation of the Controlled Mode is vested in the DOD Space Shuttle Utilization Program Office (SAMSO/LV). SAMSO will have total management responsibility within the Controlled Mode direction and funding provided by HQ USAF.

SAMSO will allocate tasks and funds to those organizations best qualified to perform the tasks; then, with specific DOD and contractor support, independently validate the adequacy of the system implementation. This validation will be achieved by monitoring and testing portions of the system during development and finally demonstrating overall adequacy prior to the first classified flight.

SAMSO will manage the Controlled Mode (JSC) implementation by accomplishing the following tasks:

1) SAMSO will provide NASA (JSC) the requirements, funding, and authority to proceed with implementation of the NASA Controlled Mode tasks, and will require cost accountability reporting on the DOD investment.

2) SAMSO will coordinate the activities of other DOD organizations (e.g., AFSCF, NSA, OSI, AFSS) that interface with NASA to ensure an efficient acquisition and implementation of the Controlled Mode capability.

3) SAMSO will establish a security engineering evaluation team which will continually monitor system development and selectively test portions of the system during development.

4) SAMSO will be a member, with approval authority, of NASA configuration control boards concerned with systems affected by Controlled Mode requirements.

5) SAMSO will conduct periodic management reviews of technical, schedule, and cost progress for all Controlled Mode (JSC) implementation tasks.

6) SAMSO will provide security test data to the DAA for approval of operational use of the Controlled Mode (JSC) configuration for secure Shuttle operations.

5.0 SCHEDULE

Tables 5-1 and 5-2 contain a schedule for the major activities required to implement the Controlled Mode (JSC). Table 5-2 shows the NASA/JSC activities, while Table 5-2 shows DOD activities. Responsible organizations within DOD for each of the major activities are also shown.

Table 5-1. Controlled Mode (JSC) Implementation Schedule - NASA Activities

ITEM	FY / Res. Org.	79	80	81	82	83	84
Facility Modification	NASA/JSC						
Building 30	NASA/JSC						
Building 5	NASA/JSC						
Building 12	NASA/JSC						
Building 5/30 Interface							
Flight Planning Capability Development	NASA/JSC						
Flight Readiness Capability Development	NASA/JSC						
Flight Control Capability Development	NASA/JSC						

Table 5-2. Controlled Mode (JSC) Implementation Schedule - DOD Activities

ITEM	FY / Res. Org.	79	80	81	82	83	84
Implementation Management	SAMSO/LV						
COMSEC System	NSA	Develop		I&C			
Security Engineering							
Def. Analysis & Monitoring	SAMSO/LV						
Test Plan Development	SAMSO/LV						
HW/SW Security Test	SAMSO/LV						
Configuration Control	SAMSO/LV						
TEMPEST Test	AFSS			MCC	FPS SMS	MCC	
Technical Survey	AFOSI				FPS SMS		
Software Security Verification							

6.0 COST

Table 6-1 presents the SAMSO budgetary (Program Element 63411F) estimates in "then year" dollars, by appropriation code, for acquisition of the Controlled Mode (JSC). These costs include funds to be transferred to NASA and funds for SAMSO contractor support. No costs are included for SAMSO, NSA, AFOSI, and AFSS personnel.

Table 6-2 presents the portion of funds to be transferred to NASA.

Table 6-1. Budgetary Estimate for Acquisition of the Controlled Mode (JSC) in "Then Year" Dollars (Millions)

Appropriation Code	Fiscal Year 1979	1980	1981	1982	1983	1984	Total
3600	2.4	6.1	12.9	17.4	.6	0	39.4
3020	1.4	17.3	9.0	16.0	0	0	43.7
3080	0	0	0	0	0	0	0
3300	0	10.0	0	0	0	0	10.0
TOTAL	3.8	33.4	21.9	33.4	.6	0	93.1

Table 6-2. Budgetary Estimate for Transfer of Funds to NASA in "Then Year" Dollars (Millions)

Appropriation Code	Fiscal Year 1979	1980	1981	1982	1983	1984	Total
3600	.3	1.2	.4	0	0	0	1.9
3020	1.4	17.3	9.0	16.0	0	0	43.7
3080	0	0	0	0	0	0	0
3300	0	10.0	0	0	0	0	10.0
TOTAL	1.7	28.5	9.4	16.0	0	0	55.6